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THOMSON

Application Number

08/376327

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US 5,843,780A

United States Patent [19]
Thomson[11] **Patent Number:** **5,843,780**[45] **Date of Patent:** **Dec. 1, 1998**[54] **PRIMATE EMBRYONIC STEM CELLS**[75] **Inventor:** **James A. Thomson, Madison, Wis.**[73] **Assignee:** **Wisconsin Alumni Research
Foundation, Madison, Wis.**[21] **Appl. No.:** **591,246**[22] **Filed:** **Jan. 18, 1996****Related U.S. Application Data**[63] **Continuation-in-part of Ser. No. 376,327, Jan. 20, 1995.**[51] **Int. Cl.⁶** **C12N 5/06**[52] **U.S. Cl.** **435/363; 435/366; 435/373**[58] **Field of Search** **435/363, 366,
435/373**[56] **References Cited****U.S. PATENT DOCUMENTS**

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Bongso, A., et al., "The Growth of Inner Cell Mass Cells from Human Blastocysts," *Theriogenology*, 41:167 (1994).Thomson, James A., et al., "Pluripotent Cell Lines Derived from Common Marmoset (*Callithrix jacchus*) Blastocysts," *Biology of Reproduction*, 55:254-259 (1996).**Primary Examiner**—Michael P. Woodward**Assistant Examiner**—Brenda G. Brumback**Attorney, Agent, or Firm**—Quarles & Brady[57] **ABSTRACT**

A purified preparation of primate embryonic stem cells is disclosed. This preparation is characterized by the following cell surface markers: SSEA-1 (-); SSEA-3 (+); SSEA-4 (+); TRA-1-60 (+); TRA-1-81 (+); and alkaline phosphatase (+). In a particularly advantageous embodiment, the cells of the preparation have normal karyotypes and continue to proliferate in an undifferentiated state after continuous culture for eleven months. The embryonic stem cell lines also retain the ability, throughout the culture, to form trophoblast and to differentiate into all tissues derived from all three embryonic germ layers (endoderm, mesoderm and ectoderm). A method for isolating a primate embryonic stem cell line is also disclosed.

11 Claims, 8 Drawing Sheets